DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: EDS-545(53) McDuffie/Wilkes
P. I. No.: 222255
S.R. 17/U.S. 78 Widening/Reconstruction

OFFICE: Engineering Services

DATE: November 7, 2005

FROM: Brian Summers, Project Review Engineer BSW

TO: Mohammed "Babs" Abubakari, State Consultant Design and Program Delivery Engineer

SUBJECT: **IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES**

Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. Incorporate alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT No.	Description	Savings PW & LCC	Implement	Comments
4	Optimize the bridge design (use the same 100' span lengths)	$1,427,233	No	There would be virtually no savings for this VE Alternate since the same size bridge would be used in both the original design and the VE Alternate. The original cost estimate was in error which caused the cost savings shown.
6	Eliminate the intersection north of the Williams Leverett House	Design Suggestion	Yes	This should be done.
6A	Combine the T-intersections north of the Williams Leverett House	-$447,990 (cost increase)	No	Additional Right of Way requirements would result in additional Environmental impacts to the Historic Resource located in the area.
8	Eliminate the intersection at Reynolds Road	$274,561	No	Subsequent Public Information Open House meeting showed strong local support to keep this median opening.

ALT No.	Description	Savings PW & LCC	Implement	Comments
9	Eliminate the Limited Access to further promote development	$433,798	No	This is not consistent with current guidelines which require Limited Access on new location projects.
10	Simplify the Bellwood Road intersection with the widened S.R. 17/U.S. 78, at the end of the project	Design Suggestion	Yes	Option 2 shown in the VE Study Report should be done.
11/12	Modify the alignment at the north end of the project	$900,000	No	Would result in additional impacts to Historic Resources. Additionally, reducing the Speed Design to 55 mph or revising the typical section to a 5 lane section is not consistent with current guidelines for this type of facility.
13	Use a one-way pair at the north end of the project	$3,062,179	No	Additional Right of Way requirements would result in additional impacts to Historic Resources along the existing S.R. 17 alignment. Also, one-way pair systems are usually not used in a rural setting.
14	Reconfigure the new roadway from Williams Leverett House to the Washington Bypass	$1,781,323	No	Additional Right of Way requirements would result in additional impacts to Historic Resources along the existing S.R. 17 alignment.
15	Shift alignment to the west	$1,294,656	No	Additional Right of Way requirements would result in additional impacts to Historic Resources along the existing S.R. 17 alignment.
16	Project the new location alignment further north to a new north terminus	-$174,560 (cost increase)	No	Would require the removal and reconstruction of approximately 3000' of the existing Washington Bypass. Could also result in additional impacts to Historic Resources.
18	Balance the earthwork	Design Suggestion	Yes	This should be done.

A meeting was held on November 3, 2005 to discuss the above recommendations. Adolfo Guzman of Clark Patterson Associates, Tom Cox of Consultant Design, and Ron Wishon of the Office of Engineering Services were in attendance. Additional comments were provided by the Bridge Design Office.

The above reflects the consensus of those in attendance and those that provided comments.

Approved: _____ **Date:** 11/7/05
David E. Studstill, P. E., Chief Engineer

BKS/REW

Attachments

c: Gus Shanine, FHWA
Tom Cox
Scott Stephens
Jennifer Mathis
Adolfo Guzman
Lisa Myers

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE EDS-545(53) McDuffie/Wilkes Counties
PI No. 222255
US 78 / SR 17 / SR 10 Widening

OFFICE Atlanta

DATE August 9, 2005

FROM Mohammed (Babs) Abubakari, P.E.,
State Consultant Design & Program Delivery Engineer

TO Brian Summers, P.E., Project Review Engineer
Attention: Lisa Myers

SUBJECT VALUE ENGINEERING STUDY – FINAL REPORT RESPONSE

Below are the responses to the Value Engineering Study conducted on February 14-16, 2005 for the above referenced project. Each comment was studied and addressed by both the Department's Project Manager and the Consultant's Project Manager:

The Widening and Reconstruction of US 78 / SR 17 / SR 10
From CR 6/Smith Mill Road to the Washington Bypass

STRUCTURAL BRIDGES:

Value Engineering Alternative No. 4 – Optimize the Bridge Design by using only one beam type and making the spans the same lengths..

COMMENTS: The parallel 300ft. long three-span (82.5ft -135ft- 82.5ft.) bridges as proposed in the plans has an estimated cost of $1.92 million. The alternate recommended by the VE study is to construct two bridges three-equal span 300 ft. long (100 ft-100 ft-100 ft.). The construction cost is practically the same.

In fact, the bridges recommended in the report will require coffer dams to construct the intermediate footings. This will add an additional construction cost of approximately $150,000.

The proposed bridge as submitted was design as recommended by the GDOT bridge hydraulics section. This design will provide a setback from the stream banks and immunize the impacts on the stream during construction.

(We do not recommend the implementation of this alternative).

ROADWAY:

Value Engineering Alternative No. 6 – Eliminate the T-intersection north of Williams Leverett House.

COMMENTS: The recommendation of eliminating the cul-de-sac as proposed south of the Williams Leverett House has been reviewed and considered. This will require a better clarification and determination of the historic boundary for the new identified Burdette Barn and a possible reduction of the posted speed limit along the remaining potion of the existing SR 17.

(We recommend the implementation of this design suggestion contingent upon above comments).

Providing a 4-leg intersection instead of a proposed T-intersection north of the Williams Leverett House will potentially impact the historic boundary of the Williams Leverett House. This alternative will require the re-alignment of old SR 17 to be designed with a larger radius to achieve a better intersecting angle and better intersection sight distance. This intersection design will require additional right of way and may potentially increase the environmental impact for this project.

(We do not recommend the implementation of this design suggestion).

Value Engineering Alternative No. 6A – Combine the T-intersection north of Williams Leverett House.

COMMENTS: Providing a 4-leg intersection instead of a proposed T-intersection north of the Williams Leverett House will potentially impact the historic boundary of the Williams Leverett House. This alternative will require the re-alignment of old SR 17 to be designed with a larger radius to achieve a better intersecting angle and better intersection sight distance. This intersection design will require additional right of way and may potentially increase the environmental impact for this project.

(We do not recommend the implementation of this design suggestion).

Value Engineering Alternative No. 8 – Eliminate Intersection at Reynolds Road

COMMENTS: The recommendation of eliminating the intersection at Reynolds Road should be partially implemented. The section of Reynolds Road south of the relocated SR 17 should be eliminated to avoid any potential impacts to the adjacent historic boundary. However, the section of Reynolds Road north of the relocated SR 17 should be tied in to the relocated SR 17 to provide a right-in right-out access to the undeveloped properties. (We recommend the implementation of this alternative contingent upon above comments).

Value Engineering Alternative No. 9 – Eliminate Limited of Access to further promote development.

COMMENTS: This alternative will not be consistent with the Department guidelines which require that all new location section be acquired as Limited Access Right-of Way.

(We do not recommend the implementation of this alternative).

Value Engineering Alternative No. 10 – Simplify the Bellwood Road intersection with the widening of SR 17 at the north end of the project.

COMMENTS: The recommendation of simplifying the Bellwood Road intersection should be carried forth. Option 2 will be further investigated. This option could potentially minimize the R/W impacts to this area. Option 1 and 3 should not be implemented because of the potential impacts to the historic property located along Reynolds Road.

(We recommend the implementation of option 2 design suggestion contingent upon above comments).

Value Engineering Alternative No. 11/12 – Modify the alignment at the north end of the project.

COMMENTS: This alternative will potentially impact 3 identified historic resources and 6 residents which will require additional environmental studies.

Reducing the design speed to 55 mph or revising the typical section from a 4-lane divided with a 44-ft depressed median to a 5 lane section would not be consistent with GADOT's desired typical section for the GRIP Corridors in rural areas.

(We do not recommend the implementation of this alternative).

Value Engineering Alternative No. 13 – Use of One way Pair at the north end of the project.

COMMENTS: This alternative does not take in consideration the required vertical reconstruction of the existing SR 17 to meet the proposed 65 mph design speed. This Alternative will potentially impact all the historic resources located along this existing section of SR 17. Also this alternative does not meet the driver's expectations for a rural area. Typically one way pair systems are use in urban areas with lower posted speeds.

(We do not recommend the implementation of this alternative).

Value Engineering Alternative No. 14 – Reconfigure the new roadway from Williams Leverett House to the Washington Bypass

COMMENTS: This alternative does not take in consideration the required vertical reconstruction of the existing SR 17 to meet the proposed 65 mph design speed. This alignment will potentially impact all the historic resources located along this existing section of SR 17. Also this alternative will not be consistent with GADOT's desired 4-lane divide with a 44-ft depressed median typical section for GRIP Corridors on rural areas.

(We do not recommend the implementation of this alternative).

Value Engineering Alternative No. 15 – Shift alignment to the west.

COMMENTS: This alternative does not take in consideration the required vertical reconstruction of the existing SR 17 to meet the proposed 65 mph design speed. This will potentially impact the 2 identified historic resources along this section of SR 17. This alternative will require additional environmental studies.

(We do not recommend the implementation of this alternative).

Value Engineering Alternative No. 16 – Project the new location alignment further north to a new north terminus.

COMMENTS: Even though, this alternative eliminates the impact to the Upton Mill subdivision, it will potentially increase the historic impact for this project. An on site inspection of the area identified several potential historic resources in the area of the recommended alternate.

In addition this alternative will require the removal and reconstruction of approximately 3000 ft of the existing Washington bypass to accommodate the relocation of SR 80.

(We do not recommend the implementation of this alternative).

Value Engineering Alternative No. 18 – Balance the Earthwork

COMMENTS: This recommendation should be carried forth. The plans will be revised to balance the earthwork during the development of the construction plans.

Wishon, Ron

From: Cox, Tom
Sent: Tuesday, March 15, 2005 8:04 AM
To: Wishon, Ron
Subject: RE: Response to VE study comments

Ron,

These responses are for Proj. No. EDS-545(53)/P.I. # 222255/McDuffie County.

Tom

From: Wishon, Ron
Sent: Monday, March 14, 2005 12:18 PM
To: Cox, Tom
Subject: FW: Response to VE study comments

Tom:
Which project do these responses apply to?

Ron

From: Mulling, David
Sent: Monday, March 14, 2005 11:25 AM
To: Wishon, Ron
Subject: FW: Response to VE study comments

From: Beck, Susan
Sent: Monday, March 14, 2005 11:22 AM
To: Cox, Tom
Cc: Abubakari, Babs; Mulling, David; Myers, Lisa; Tiernan, John
Subject: Response to VE study comments

Tom,
Attached are my comments to Alternative #4 listed in the VE study which involves changing the spar arrangement of the proposed bridges to three-100 ft long PSC beam spans:

1. The consultant should verify the bank stations shown on the preliminary layout. These stations should come from the survey data provided in the CAiCE file to the consultant to perform the hydraulic study. Also, the project manager should request that the intermediate bents be staked out by District personnel and distances from the tops of the banks to the left and right side of each intermediate bent of each bridge should be given.
2. The VE study proposes to place both intermediate bents within the limits of the creek. Based on the hydraulic site inspection performed by the consultant and information in the Maintenance files, the consultant should determine whether debris may be a problem at this site. If debris collects on the intermediate bents, it will result in scour problems.
3. The consultant should verify how much the proposed bridge profile could be lowered. The minimum bottom of beam elevation should be no lower than elevation 346.53 (100 year floodstage elevation (345.53) + 1 ft).
4. The VE study states that cofferdams will be required for the alternate #4 bridge and "would likely" be required for the originally proposed span arrangement. The consultant should verify whether this statement is correct based on the results of item #1 above.
5. The VE study states that the original cost estimate of the as-designed bridge is in error

yet proceeds to compare the price of the proposed alternative #4 bridge to this original incorrect estimate to show a savings of $1.4M. Since both bridge alternates are 300 ft long PSC beam twin bridges, there will be practically no savings involved using a different span arrangement. There may be modest savings due to the smaller crane required for the smaller beams and not having to build risers on the intermediate bent caps. However, if the alternate #4 bridge requires cofferdams and the original bridge does not, this savings will be more than offset.

I recommend using the 3-100 ft span arrangement for the following conditions:

1. The banks are shown incorrectly on the existing preliminary layout requiring a 160+ ft long intermediate span to span the creek and allow a 10 ft setback from the banks. Placing the intermediate bents within the limits of the channel will protect the banks from being broken down during construction.
2. Debris is not a problem at this site.

I recommend using the proposed 82.5′ - 135′- 82.5′ span arrangement for the following conditions:

1. The banks are shown correctly on the existing preliminary layout. This provides setback to keep the banks from being broken down during construction.

I recommend using an alternate span arrangement placing only one bent within the limits of the channel for the following conditions:

1. The banks are shown incorrectly on the existing preliminary bridge layout.
2. There is a significant debris problem at the site. This will protect the banks and will reduce the chances of collecting debris.

Let me know if you have any questions.

Susan T. Beck
Office of Bridge Hydraulics
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